

Note to readers with disabilities: *EHP* strives to ensure that all journal content is accessible to all readers. However, some figures and Supplemental Material published in *EHP* articles may not conform to [508 standards](#) due to the complexity of the information being presented. If you need assistance accessing journal content, please contact ehponline@niehs.nih.gov. Our staff will work with you to assess and meet your accessibility needs within 3 working days.

Supplemental Material

Exposure to Traffic-Related Air Pollution and Serum Inflammatory Cytokines in Children

Olena Gruzieva, Simon Kebede Merid, Anna Gref, Ashwini Gajulapuri, Nathanaël Lemonnier, Stéphane Ballereau, Bruna Gigante, Juha Kere, Charles Auffray, Erik Melén, and Göran Pershagen

Table of Contents

Table S1. Associations between PM₁₀ exposure and blood cytokine levels in the BAMSE children.

Table S2. Associations between PM₁₀ exposure and blood cytokine levels stratified by doctor's diagnosis of asthma ever up to 8 years in the BAMSE children.

Table S3. Associations between NO₂ exposure and blood cytokine levels stratified by child's sex and maternal smoking during pregnancy and/or infancy in the BAMSE children.

Table S4. Associations between PM₁₀ exposure and blood cytokine levels stratified by child's sex and maternal smoking during pregnancy and/or infancy in the BAMSE children.

Table S5. Associations between NO₂ and PM₁₀ exposure and blood cytokine levels in the BAMSE children, excluding subjects currently taking asthma medication.

Table S6. Associations between NO₂ exposure and blood cytokine levels including both early and current exposures to the same model.

Table S7. Associations between PM₁₀ exposure and gene expression in 16-year-old BAMSE children (N=238).

Table S8. Association between NO₂ exposure levels at 16 years of age and *IL6* expression levels in BAMSE stratified by genotype (n=166).

Figure S1. Box plots of the distribution of serum inflammatory cytokines concentration stratified by doctor's diagnosis of asthma ever up to 8 years.

Table S1. Associations between PM₁₀ exposure and blood cytokine levels in the BAMSE children.

Cytokine	PM ₁₀ during infancy		PM ₁₀ at 8 years	
	N	Estimate ¹ (95% CI)	N	Estimate ¹ (95% CI)
IFN-γ	655	14.7 (-3.4; 36.1)	644	1.2 (-8.8; 12.3)
IL-1β	145	0.9 (-60.8; 159.6)	142	-15.4 (-52.8; 51.8)
IL-10	655	6.9 (-7.3; 23.3)	644	4.4 (-4.2; 13.8)
IL-12p70	621	-3.5 (-23.9; 22.4)	610	2.0 (-11.6; 17.7)
IL-13	585	2.4 (-15.2; 23.6)	576	1.3 (-9.7; 13.6)
IL-2	627	-9.6 (-29.0; 15.0)	616	0.9 (-12.7; 16.7)
IL-4	577	-11.0 (-32.7; 17.6)	566	-12.7 (-25.9; 2.8)
IL-6	655	20.0 (3.6; 39.0)	644	5.5 (-3.5; 15.4)
IL-8	655	1.7 (-10.4; 15.5)	644	-4.9 (-11.8; 2.7)
TNF-α	655	6.2 (-1.9; 15.0)	644	1.2 (-3.6; 6.1)

¹ Results are obtained by means of linear regression analyses and presented as percentage change in concentration of cytokines per 5 µg/m³ increase of PM₁₀ exposure. Adjusted for child's sex, DD asthma ever up to 8 years, and municipality at birth.

PM₁₀= particulate matter with aerodynamic diameter <10 µm; IFN=Interferon; TNF=tumor necrosis factor; IL=interleukin.

Table S2. Associations between PM₁₀ exposure and blood cytokine levels stratified by doctor's diagnosis of asthma ever up to 8 years in the BAMSE children.

Exposure	Cytokine	Asthmatics		Nonasthmatics		p-value for interaction
		N	Estimate ¹ (95% CI)	N	Estimate ¹ (95% CI)	
PM ₁₀ during infancy	IFN-γ	242	44.1 (3.4; 100.7)	413	3.1 (-15.2; 25.4)	0.54
	IL-1β	51	13.4 (-71.5; 351.6)	94	-10.2 (-75.2; 224.9)	0.57
	IL-10	242	40.7 (11.1; 78.2)	413	-5.8 (-21.2; 12.6)	0.92
	IL-12p70	233	5.1 (-30.9; 59.8)	388	-6.0 (-29.7; 25.8)	0.41
	IL-13	215	13.5 (-13.8; 49.5)	370	-2.7 (-24.3; 25.0)	0.56
	IL-2	234	-12.4 (-45.0; 39.7)	393	-8.9 (-31.0; 20.2)	0.96
	IL-4	217	-39.1 (-64.5; 4.5)	360	4.3 (-24.6; 44.2)	0.11
	IL-6	242	46.9 (10.7; 95.0)	413	9.9 (-7.2; 30.2)	0.95
	IL-8	242	5.3 (-16.6; 32.8)	413	-0.1 (-14.2; 16.4)	0.73
	TNF-α	242	10.5 (-4.2; 27.6)	413	4.6 (-5.0; 15.1)	0.32
PM ₁₀ at 8 years	IFN-γ	234	0.4 (-21.5; 28.4)	410	0.7 (-10.2; 13.0)	0.24
	IL-1β	48	152.7 (-13.1; 635.1)	94	-45.2 (-73.6; 13.7)	0.07
	IL-10	234	2.6 (-13.7; 22.1)	410	5.6 (-4.9; 17.2)	0.17
	IL-12p70	225	-2.0 (-27.2; 32.0)	385	5.6 (-11.2; 25.5)	0.39
	IL-13	208	9.6 (-10.5; 34.2)	368	-0.8 (-14.5; 15.1)	0.49
	IL-2	226	-7.1 (-33.8; 30.4)	390	2.7 (-12.6; 20.8)	0.53
	IL-4	209	-35.2 (-54.8; -7.1)	357	-2.0 (-19.0; 18.5)	0.04
	IL-6	234	2.3 (-17.1; 26.3)	410	7.6 (-2.6; 18.9)	0.41
	IL-8	234	-12.5 (-25.8; 3.3)	410	-3.3 (-11.6; 5.8)	0.25
	TNF-α	234	-6.2 (-15.5; 4.1)	410	4.4 (-1.3; 10.4)	0.01

¹ Results are obtained by means of linear regression analyses and presented as percentage change in concentration of cytokines per 5 µg/m³ increase of PM₁₀ exposure in asthmatic and nonasthmatic subjects (estimates in columns "Asthmatics" and "Nonasthmatics", respectively). Adjusted for child's sex and municipality at birth.

PM₁₀= particulate matter with aerodynamic diameter <10 µm;

IFN=Interferon; TNF=tumor necrosis factor; IL=interleukin.

Table S3. Associations between NO₂ exposure and blood cytokine levels stratified by child's sex and maternal smoking during pregnancy and/or infancy in the BAMSE children.

		Child's sex			Maternal smoking during pregnancy and/or infancy		
		Estimate ¹ (95% CI)		p-value for interaction	Estimate ² (95% CI)		p-value for interaction
Exposure	Cytokine	Girls	Boys		No	Yes	
NO ₂ during infancy	IFN-γ	8.9 (-10.4; 32.3)	13.4 (-7.2; 38.4)	0.91	10.1 (-5.0; 27.5)	20.9 (-24.3; 93.0)	0.26
	IL-1β	57.4 (-47.2; 369.6)	-45.1 (-80.5; 54.8)	0.43	-4.3 (-57.2; 114.2)	-69.7 (-98.8; 646.8)	0.72
	IL-10	5.4 (-9.6; 22.8)	4.8 (-11.9; 24.6)	0.42	4.4 (-7.7; 18.2)	18.0 (-18.5; 70.9)	0.88
	IL-12p70	-20.5 (-38.2; 2.2)	5.2 (-21.0; 39.9)	0.58	-13.8 (-29.5; 5.4)	51.8 (-23.4; 200.6)	0.26
	IL-13	-9.7 (-27.3; 12.1)	7.1 (-13.9; 33.2)	0.18	-1.4 (-16.2; 16.1)	-15.0 (-48.0; 38.8)	0.49
	IL-2	-24.5 (-41.6; -2.4)	20.0 (-10.3; 60.6)	0.77	-6.5 (-23.4; 14.1)	0.01 (-57.3; 134.3)	0.94
	IL-4	-16.8 (-38.6; 12.8)	7.0 (-23.2; 49.2)	0.72	-3.0 (-23.5; 22.9)	-32.7 (-68.8; 45.18)	0.40
	IL-6	6.6 (-9.4; 25.3)	20.8 (1.2; 44.2)	0.30	13.0 (-0.1; 27.9)	36.0 (-16.3; 120.9)	0.18
	IL-8	0.3 (-13.3; 16.0)	-0.003 (-13.7; 15.9)	0.56	1.6 (-8.8; 13.2)	-21.9 (-45.5; 12.1)	0.40
	TNF-α	-2.8 (-11.2; 6.4)	1.6 (-7.5; 11.5)	0.63	-0.6 (-7.0; 6.3)	1.8 (-22.2; 33.1)	0.37
NO ₂ at 8 years	IFN-γ	5.6 (-8.9; 22.3)	-3.7 (-16.0; 10.5)	0.22	-1.3 (-11.3; 9.8)	23.9 (-8.4; 67.5)	0.56
	IL-1β	13.8 (-64.9; 268.8)	-19.8 (-57.9; 53.0)	0.89	-7.0 (-51.1; 77.0)	41.4 (-77.9; 804.6)	0.62
	IL-10	4.1 (-7.3; 16.7)	2.5 (-8.9; 15.4)	0.86	0.8 (-7.8; 10.2)	38.4 (9.7; 74.5)	0.04
	IL-12p70	-11.5 (-27.4; 7.9)	11.9 (-7.7; 35.6)	0.38	-0.3 (-13.9; 15.5)	15.5 (-26.9; 82.7)	0.40
	IL-13	-2.0 (-16.8; 15.4)	5.6 (-9.6; 23.2)	0.32	-0.4 (-11.7; 12.4)	20.6 (-12.5; 66.0)	0.27
	IL-2	-5.6 (-22.3; 14.8)	6.2 (-13.1; 29.8)	0.81	-1.1 (-14.4; 14.3)	20.6 (-32.3; 114.7)	0.38
	IL-4	-7.3 (-26.0; 16.2)	-18.3 (-34.6; 1.9)	0.40	-16.7 (-29.5; -1.5)	24.8 (-25.3; 108.5)	0.06
	IL-6	7.5 (-4.9; 21.4)	1.6 (-10.1; 14.8)	0.65	6.3 (-2.8; 16.3)	-6.85 (-32.5; 28.5)	0.89
	IL-8	-5.9 (-15.6; 4.9)	-5.7 (-14.7; 4.3)	0.95	-4.9 (-12.1; 2.8)	-20.6 (-37.1; 0.3)	0.75
	TNF-α	-1.4 (-7.9; 5.6)	0.8 (-5.4; 7.4)	0.76	-1.6 (-6.2; 3.3)	17.9 (-0.6; 39.9)	0.15

¹ Results are obtained by means of linear regression analyses and presented as percentage change in concentration of cytokines per 10 µg/m³ increase of NO₂. Adjusted for DD asthma ever up to 8 years, and municipality at birth.

²Adjusted for child's sex, SHS at 8 years, DD asthma ever up to 8 years, and municipality at birth. IFN=Interferon; TNF=tumor necrosis factor; IL=interleukin.

Table S4. Associations between PM₁₀ exposure and blood cytokine levels stratified by child's sex and maternal smoking during pregnancy and/or infancy in the BAMSE children.

		Child's sex			Maternal smoking during pregnancy and/or infancy		
		Estimate ¹ (95% CI)		p-value for interaction	Estimate ² (95% CI)		p-value for interaction
Exposure	Cytokine	Girls	Boys		No	Yes	
PM ₁₀ during infancy	IFN-γ	4.3 (-17.8; 32.4)	26.3 (-1.3; 61.6)	0.78	14.1 (-4.7; 36.7)	25.7 (-30.3; 126.5)	0.26
	IL-1β	71.0 (-56.4; 570.7)	-41.2 (-83.8; 112.9)	0.40	2.7 (-62.1; 178.2)	-4.0 (-99.8; 46366)	0.72
	IL-10	3.8 (-13.9; 25.3)	9.0 (-12.0; 35.0)	0.34	8.5 (-6.8; 26.2)	-10.6 (-44.0; 42.9)	0.88
	IL-12p70	-14.2 (-37.4; 17.6)	7.09 (-24.7; 52.2)	0.72	-8.7 (-28.8; 17.1)	52.3 (-36.1; 263.1)	0.26
	IL-13	-10.4 (-31.4; 17.0)	16.5 (-10.8; 52.2)	0.14	4.1 (-14.8; 27.2)	-30.4 (-62.1; 27.6)	0.49
	IL-2	-33.0 (-51.2; -8.1)	23.7 (-13.5; 77.0)	0.96	-10.4 (-29.9; 14.4)	-2.5 (-66.8; 186.4)	0.94
	IL-4	-13.9 (-40.8; 25.3)	-8.0 (-39.2; 39.1)	0.98	-5.1 (-29.1; 27.2)	-58.4 (-83.7; 6.2)	0.40
	IL-6	4.7 (-14.2; 27.7)	37.9 (11.0; 71.5)	0.14	18.8 (2.2; 38.2)	41.4 (-23.4; 160.8)	0.18
	IL-8	2.4 (-14.4; 22.4)	1.0 (-15.8; 21.2)	0.62	4.4 (-8.6; 19.2)	-27.9 (-54.2; 13.5)	0.40
	TNF-α	0.5 (-10.1; 12.3)	12.6 (0.4; 26.2)	0.40	7.2 (-1.2; 16.3)	-1.6 (-29.8; 38.1)	0.37
PM ₁₀ at 8 years	IFN-γ	4.56 (-10.43; 22.05)	-3.1 (-15.8; 11.5)	0.25	-1.3 (-11.6; 10.3)	28.5 (-6.7; 77.1)	0.55
	IL-1β	10.57 (-64.52; 244.64)	-36.7 (-66.2; 18.5)	0.87	-25.9 (-61.0; 41.0)	52.1 (-63.2; 528.4)	0.42
	IL-10	3.72 (-8.05; 17.00)	3.1 (-8.7; 16.4)	0.85	1.4 (-7.5; 11.2)	38.5 (8.0; 77.5)	0.06
	IL-12p70	-8.51 (-25.51; 12.38)	8.8 (-10.8; 32.8)	0.67	0.3 (-13.7; 16.6)	15.7 (-30.4; 92.3)	0.44
	IL-13	-1.35 (-16.86; 17.04)	3.8 (-11.2; 21.3)	0.47	-1.2 (-12.7; 11.7)	27.0 (-9.6; 78.4)	0.19
	IL-2	-3.29 (-21.20; 18.69)	4.5 (-14.9; 28.2)	0.97	-0.4 (-14.2; 15.6)	17.3 (-36.6; 117.3)	0.49
	IL-4	-7.51 (-26.85; 16.93)	-17.6 (-34.6; 3.9)	0.44	-17.5 (-30.6; -1.9)	40.7 (-18.6; 143.1)	0.03
	IL-6	5.95 (-6.74; 20.37)	4.2 (-8.1; 18.2)	0.94	6.8 (-2.6; 17.2)	-5.3 (-32.7; 33.5)	0.98
	IL-8	-5.69 (-15.86; 5.71)	-4.3 (-13.6; 6.2)	0.97	-4.5 (-11.9; 3.5)	-16.3 (-34.9; 7.7)	0.99
	TNF-α	-0.29 (-7.13; 7.07)	2.0 (-4.4; 8.9)	0.76	0.02 (-4.8; 5.1)	16.7 (-2.8; 40.2)	0.28

¹ Results are obtained by means of linear regression analyses and presented as percentage change in concentration of cytokines per 5 µg/m³ increase of PM₁₀ exposure.

Adjusted for DD asthma ever up to 8 years, and municipality at birth.

² Adjusted for child's sex, SHS at 8 years, DD asthma ever up to 8 years, and municipality at birth. IFN=Interferon; TNF=tumor necrosis factor; IL=interleukin.

Table S5. Associations between NO₂ and PM₁₀ exposure and blood cytokine levels in the BAMSE children, excluding subjects currently taking asthma medication.

Cytokine	NO ₂ during infancy		NO ₂ at 8 years	
	N	Estimate ¹ (95% CI)	N	Estimate ¹ (95% CI)
IFN-γ	500	6.2 (-9.6; 24.7)	496	1.5 (-9.1; 13.2)
IL-1β	116	-1.0 (-58.5; 136.3)	115	-17.2 (-56.8; 58.7)
IL-10	500	2.6 (-10.5; 17.6)	496	3.1 (-6.0; 13.2)
IL-12p70	470	-3.6 (-23.5; 21.6)	466	6.6 (-9.1; 25.1)
IL-13	447	0.9 (-16.3; 21.5)	444	-1.1 (-13.1; 12.5)
IL-2	478	9.7 (-12.0; 36.8)	474	2.7 (-11.7; 19.3)
IL-4	438	-0.4 (-24.0; 30.7)	434	-10.7 (-25.6; 7.3)
IL-6	500	16.0 (1.2; 33.0)	496	7.4 (-2.2; 17.9)
IL-8	500	2.7 (-8.8; 15.7)	496	-6.2 (-13.5; 1.7)
TNF-α	500	1.3 (-6.1; 9.3)	496	2.4 (-2.8; 7.8)
<hr/>				
	PM ₁₀ during infancy		PM ₁₀ at 8 years	
IFN-γ	500	6.6 (-12.4; 29.7)	496	0.5 (-10.2; 12.6)
IL-1β	116	-6.2 (-66.5; 163.2)	115	-30.7 (-63.1; 29.9)
IL-10	500	0.9 (-14.6; 19.2)	496	2.8 (-6.6; 13.1)
IL-12p70	470	0.7 (-24.1; 33.7)	466	4.2 (-11.7; 22.9)
IL-13	447	4.1 (-17.2; 30.8)	444	-2.0 (-14.2; 11.8)
IL-2	478	0.8 (-23.1; 32.1)	474	0.2 (-14.2; 17.0)
IL-4	438	-3.0 (-30.1; 34.6)	434	-10.3 (-25.8; 8.5)
IL-6	500	19.4 (1.0; 41.1)	496	6.6 (-3.2; 17.4)
IL-8	500	1.5 (-12.2; 17.3)	496	-6.0 (-13.5; 2.2)
TNF-α	500	7.6 (-1.9; 18.0)	496	3.0 (-2.4; 8.6)

¹ Results are obtained by means of linear regression analyses and presented as percentage change in concentration of cytokines per 10 µg/m³ increase of NO₂ and 5 µg/m³ increase of PM₁₀ exposure. Adjusted for child's sex, DD asthma ever up to 8 years, and municipality at birth.

IFN=Interferon; TNF=tumor necrosis factor; IL=interleukin.

Table S6. Associations between NO₂ exposure and blood cytokine levels including both early and current exposures to the same model.

			Both exposure windows mutually adjusted
Exposure	Cytokine	N	Estimate¹ (95% CI)
NO ₂ during infancy	IFN-γ	642	10.9 (-4.1; 28.2)
	IL-1β	142	-6.9 (-57.1; 102.1)
	IL-10	642	4.1 (-7.7; 17.4)
	IL-12p70	608	-8.6 (-24.9; 11.1)
	IL-13	574	-1.4 (-16.0; 15.6)
	IL-2	614	-4.0 (-21.6; 17.6)
	IL-4	564	-0.8 (-21.5; 25.2)
	IL-6	642	12.2 (-0.9; 27.1)
	IL-8	642	1.9 (-8.4; 13.3)
	TNF-α	642	-1.0 (-7.4; 5.9)
<hr/>			
NO ₂ at 8 years	IFN-γ	642	-0.4 (10.2; 10.3)
	IL-1β	142	1.8 (-44.3; 86.0)
	IL-10	642	3.4 (-5.1; 12.6)
	IL-12p70	608	3.2 (-10.4; 19.0)
	IL-13	574	2.0 (-9.1; 14.4)
	IL-2	614	1.0 (-12.6; 16.7)
	IL-4	564	-13.0 (-26.0; 2.2)
	IL-6	642	2.7 (-6.0; 12.1)
	IL-8	642	-6.0 (-12.8; 1.3)
	TNF-α	642	0.04 (-4.6; 4.9)

¹ Results are obtained by means of linear regression analyses and presented as percentage change in concentration of cytokines per 10 µg/m³ increase of NO₂ exposure. Adjusted for child's sex, DD asthma ever up to 8 years, and municipality at birth, and exposure during another period (during infancy or at 8 years, respectively).

IFN=Interferon; TNF=tumor necrosis factor; IL=interleukin.

Table S7. Associations between PM₁₀ exposure and gene expression in 16-year-old BAMSE children (N=238).

Probe ID	Gene	PM ₁₀ during infancy			PM ₁₀ at 16 years		
		LogFC ¹	p-value	FDR ² p-value	LogFC ¹	p-value	FDR ² p-value
TC12001696.hg.1	<i>IFNG</i>	0.08	0.17	0.22	0.04	0.42	0.72
TC02002219.hg.1	<i>IL1B</i>	-0.11	0.11	0.21	-0.12	0.01	0.25
TC01003766.hg.1	<i>IL10</i>	0.09	0.01	0.19	0.03	0.21	0.72
TC03000870.hg.1	<i>IL12A</i>	0.03	0.33	0.40	0.05	0.03	0.28
TC05001997.hg.1	<i>IL12B</i>	0.05	0.17	0.22	0.01	0.82	0.93
TC05000640.hg.1	<i>IL13</i>	0.05	0.14	0.22	0.04	0.05	0.32
TC04001520.hg.1	<i>IL2</i>	0.06	0.15	0.22	0.004	0.90	0.95
TC05000641.hg.1	<i>IL4</i>	0.02	0.69	0.73	-0.01	0.72	0.86
TC07000137.hg.1	<i>IL6</i>	-0.01	0.82	0.82	0.02	0.37	0.72
TC04000408.hg.1	<i>IL8</i>	-0.04	0.53	0.59	0.0002	1.00	1.00
TC6_apd_hap1000036.hg.1	<i>TNF</i>	0.09	0.09	0.21	0.04	0.29	0.72
TC06000371.hg.1 ³	<i>TNF</i>	0.07	0.12	0.21	0.02	0.56	0.72

¹ Results are obtained by means of linear regression analyses and presented per 5 µg/m³ increase of PM₁₀ exposure. Adjusted for child's sex, DD asthma ever up to 16 years, municipality at birth, and measured cell counts. LogFC=logarithm fold-change (one unit of the logFCs translates to a two-fold change in expression).

² FDR=false discovery rate correction based on 18 probesets.

³ Seven alternatives haplotypes assemblies of this *TNF* probeset are available (apd, cox, dbb, mann, mcf, qbl and ssto) and bear similar log2 intensity values.

IFN=Interferon; TNF=tumor necrosis factor; IL=interleukin.

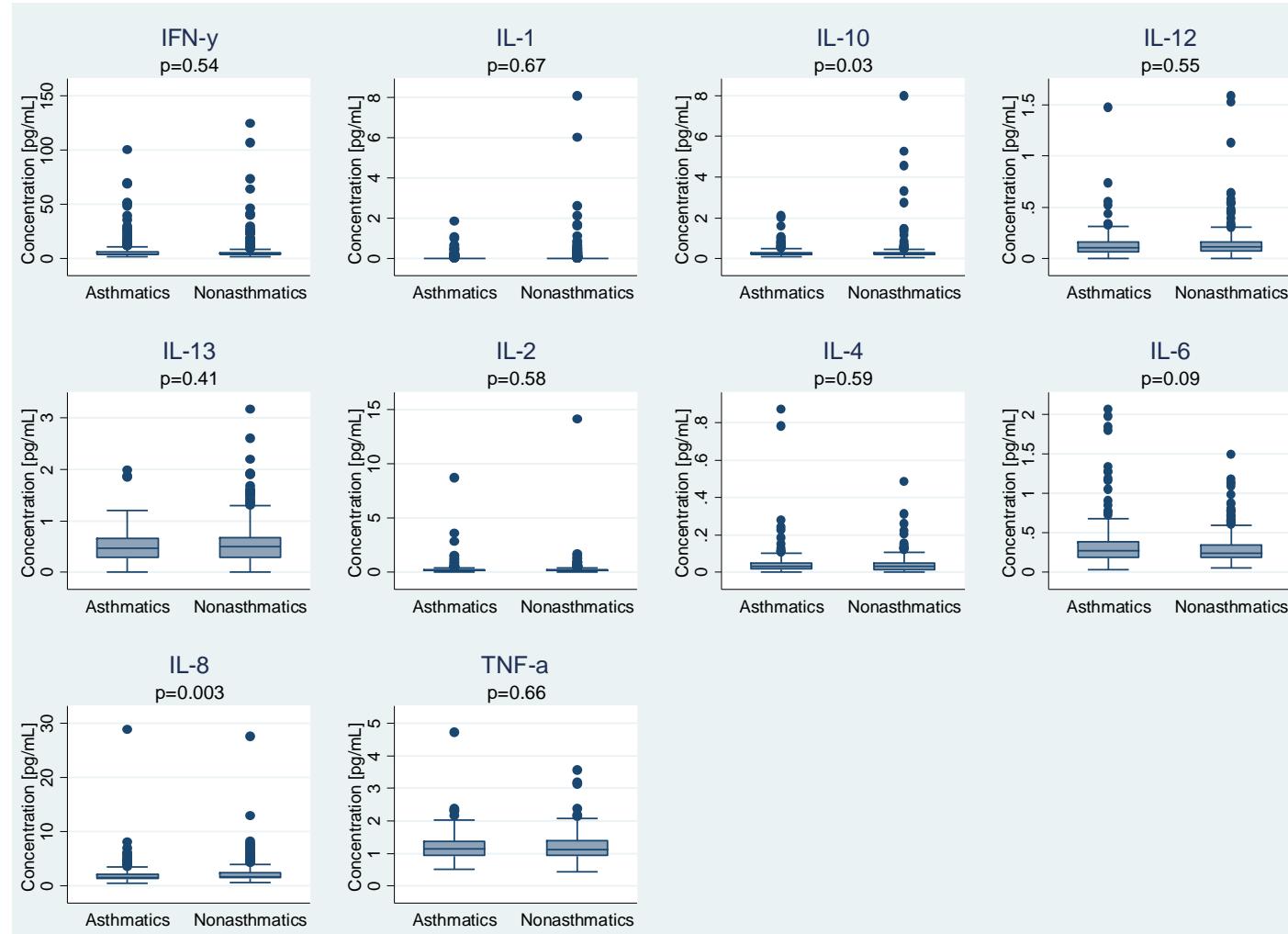
Table S8. Association between NO₂ exposure levels at 16 years of age and *IL6* expression levels in BAMSE stratified by genotype (n=166).

Chr	<i>IL6</i> SNP	Genotype	Coef	P-Value	Interaction P-Value
7					
	rs1474347	AA n=35	0.17	0.10	0.44
		AC n=72	0.13	0.01	
		CC n=59	-0.06	0.42	
	rs1474348	CC n=35	0.17	0.10	0.44
		CG n=72	0.13	0.01	
		GG n=59	-0.06	0.42	
	rs1524107	CC n=00	-----	-----	0.11
		CT n=19	0.26	0.24	
		TT n=147	0.043	0.21	
	rs1554606	GG n=37	0.15	0.13	0.72
		GT n=77	0.093	0.06	
		TT n=52	-0.03	0.75	
	rs1800795	CC n=36	0.15	0.12	0.44
		CG n=71	0.13	0.01	
		GG n=59	-0.06	0.42	
	rs1800796	CC n=00	-----	-----	0.11
		CG n=19	0.27	0.23	
		GG n=147	0.043	0.21	
	rs1800797	AA n=32	0.14	0.14	0.48
		AG n=72	0.12	0.02	
		GG n=62	-0.04	0.52	
	rs2066992	GG n=00	-----	-----	0.11
		GT n=19	0.28	0.24	
		TT n=147	0.043	0.02	
	rs2069824	CC n=2	-----	-----	0.75
		CT n=21	-1.09	0.03	
		TT n=143	0.09	0.02	
	rs2069827	GG n=2	-----	-----	0.83
		GT n=26	0.03	0.86	
		TT n=138	0.083	0.03	
	rs2069832	AA n=35	0.17	0.1	0.44
		AG n=72	0.13	0.01	
		GG n=59	-0.06	0.43	
	rs2069833	CC n=35	0.17	0.1	0.44
		CT n=72	0.13	0.01	
		TT n=59	-0.06	0.43	
	rs2069835	CC n=1	-----	-----	0.78
		CT n=22	-0.86	0.08	
		TT n=134	0.09	0.02	
	rs2069837	AA n=1	-----	-----	0.026
		AG n=27	-0.14	0.13	
		GG n=138	0.11	0.007	
	rs2069840	CC n=22	0.06	0.26	0.99
		CG n=65	0.03	0.54	

	GG n=79	0.13	0.03	
rs2069845				
	AA n=37	0.15	0.13	0.72
	AG n=77	0.093	0.06	
	GG n=52	-0.03	0.75	
rs2069861				
	CC n=00	-----	-----	0.72
	CT n=23	0.3	0.25	
	TT n=143	0.07	0.06	

Adjusted for child's sex, DD asthma ever up to 16 years, municipality at birth, and measured cell counts. Coef: log fold change in gene expression per 10 $\mu\text{g}/\text{m}^3$ increase in NO_2 exposure. P-value:pvalue for association between NO_2 exposure and gene expression. Interaction p-value: pvalue for association between SNPx NO_2 and gene expression.

Figure S1. Box plots of the distribution of serum inflammatory cytokines concentration stratified by doctor's diagnosis of asthma ever up to 8 years.



p-values for differences between children with and without asthma using the Mann-Whitney U-Test. IFN=Interferon; TNF=tumor necrosis factor; IL=interleukin.